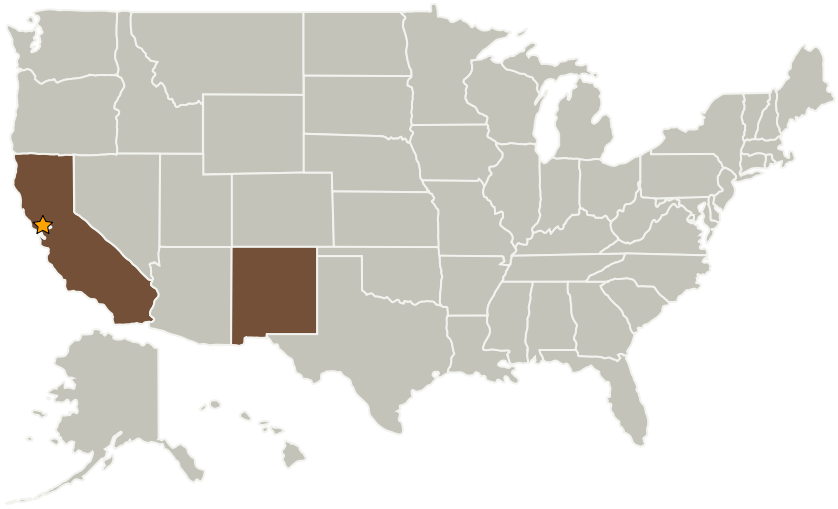
High Sensitivity Ethylene Sensor for Plant Health Monitoring, Phase I

Completed Technology Project (2004 - 2004)

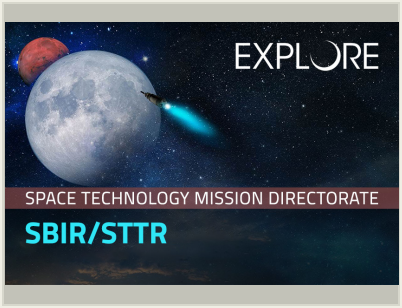
Project Introduction

The ability to grow food and recycle components of cabin air are critical to the success of long-term space flight missions. In order to assure that plants used for biomass production grow under optimal conditions, sensors are required to monitor the generation of biogenic and other relevant gases. In particular, ethylene gas must be carefully controlled to promote rapid growth of biomass products, yet be limited so as to prevent premature spoilage or degradation of the crops. The goal of this program is to develop a compact ethylene sensor with sufficient sensitivity for biomass monitoring and research that would also meet the unique needs required for space flight operation. The anticipated results of the Phase I and II research would culminate in the delivery of a fully operational, stand-alone, high sensitivity (1 part-per-billion) ethylene sensor. This sensor would have capabilities for monitoring other biogenic gases as well as cabin environmental trace species. Commercial applications would include medical breath analyses, portable hazardous gas sensors, and industrial process control monitors.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Southwest Sciences, Inc.	Supporting Organization	Industry	Santa Fe, New Mexico



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
California	New Mexico

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Joel Silver

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors